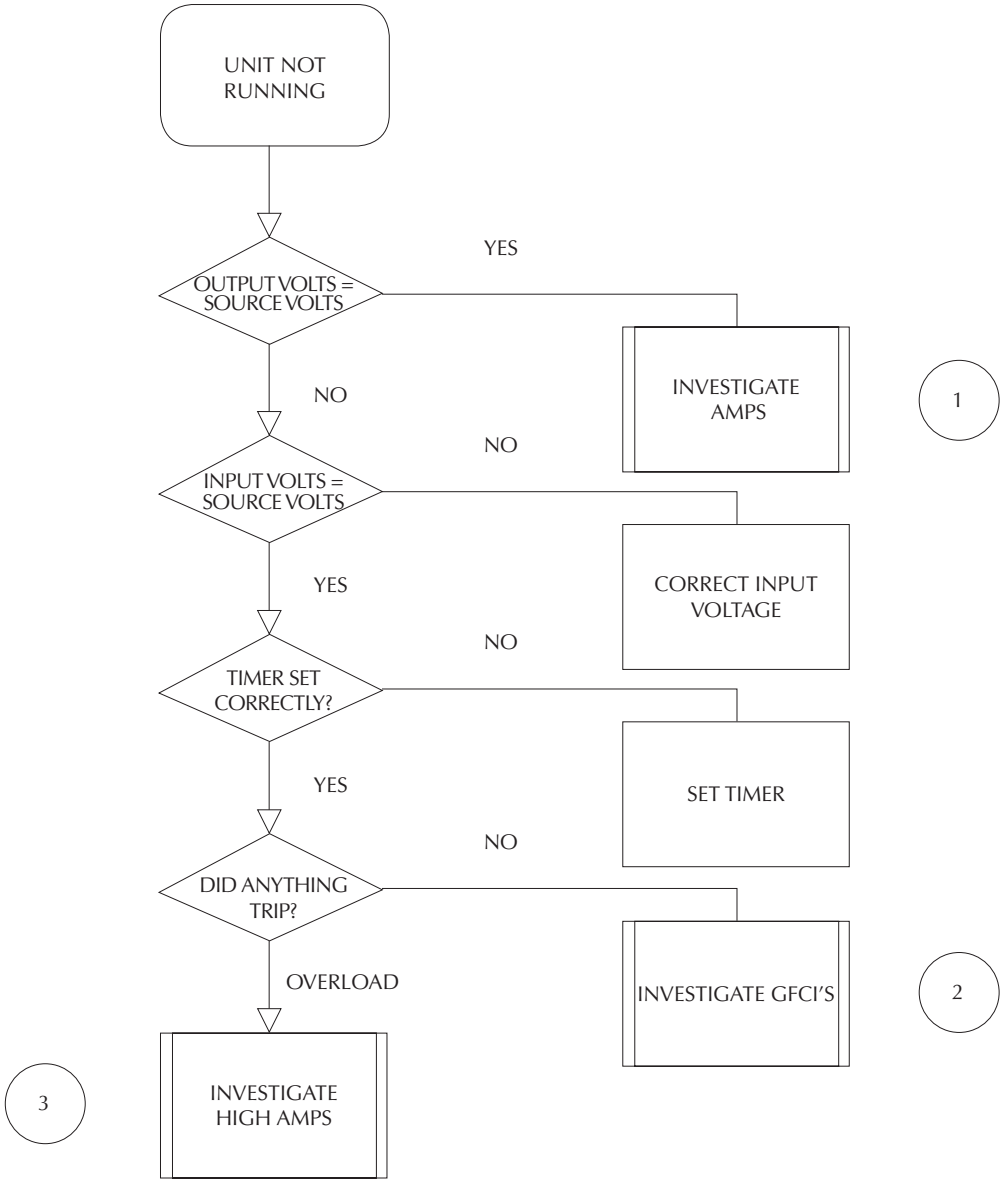
Aqua Control, Inc.

TROUBLESHOOTING



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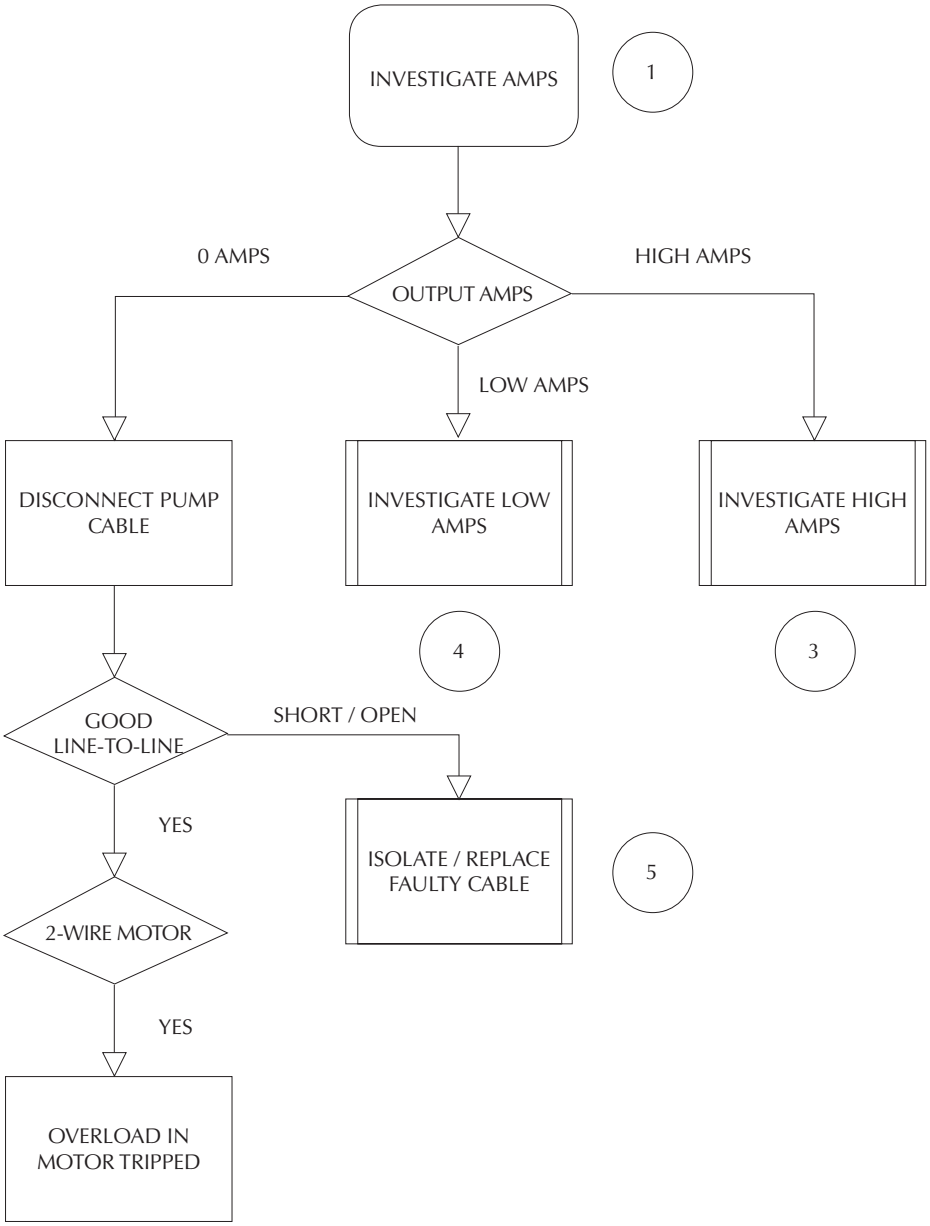
TROUBLESHOOTING



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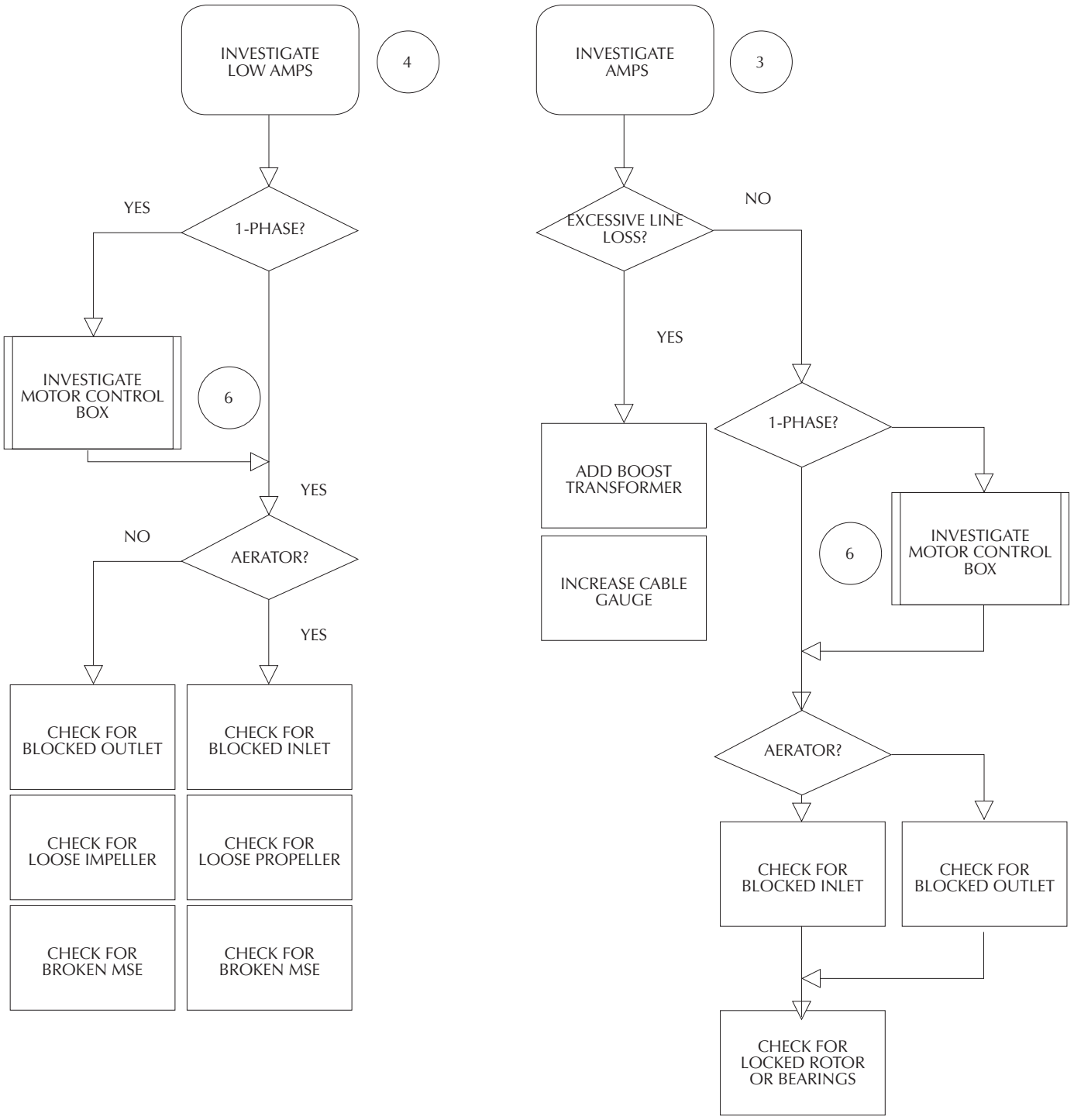

High amps, (locked rotor amps) are only needed for very short periods of time, usually 1 second or less. Many multimeters will not register the high amps.

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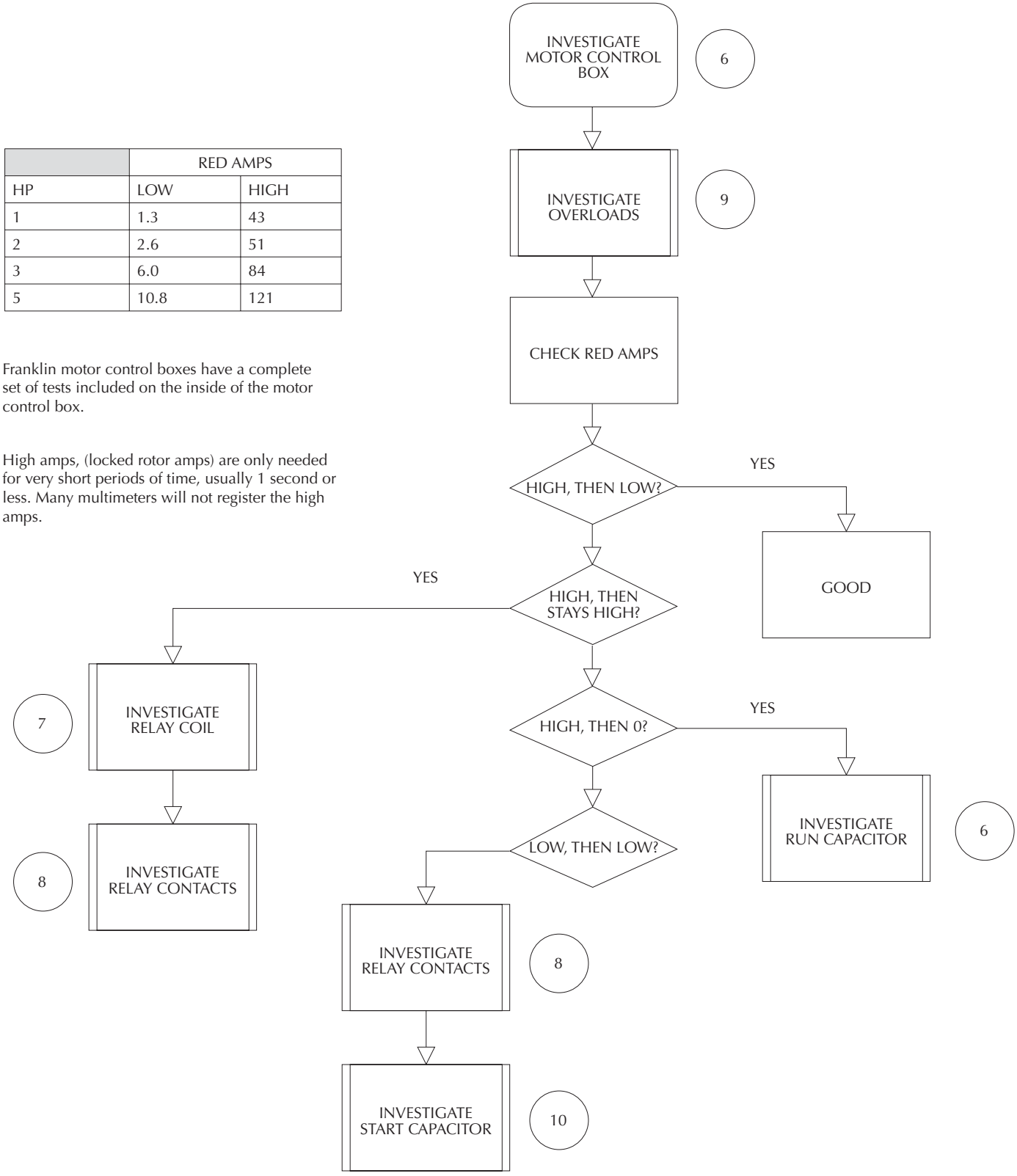
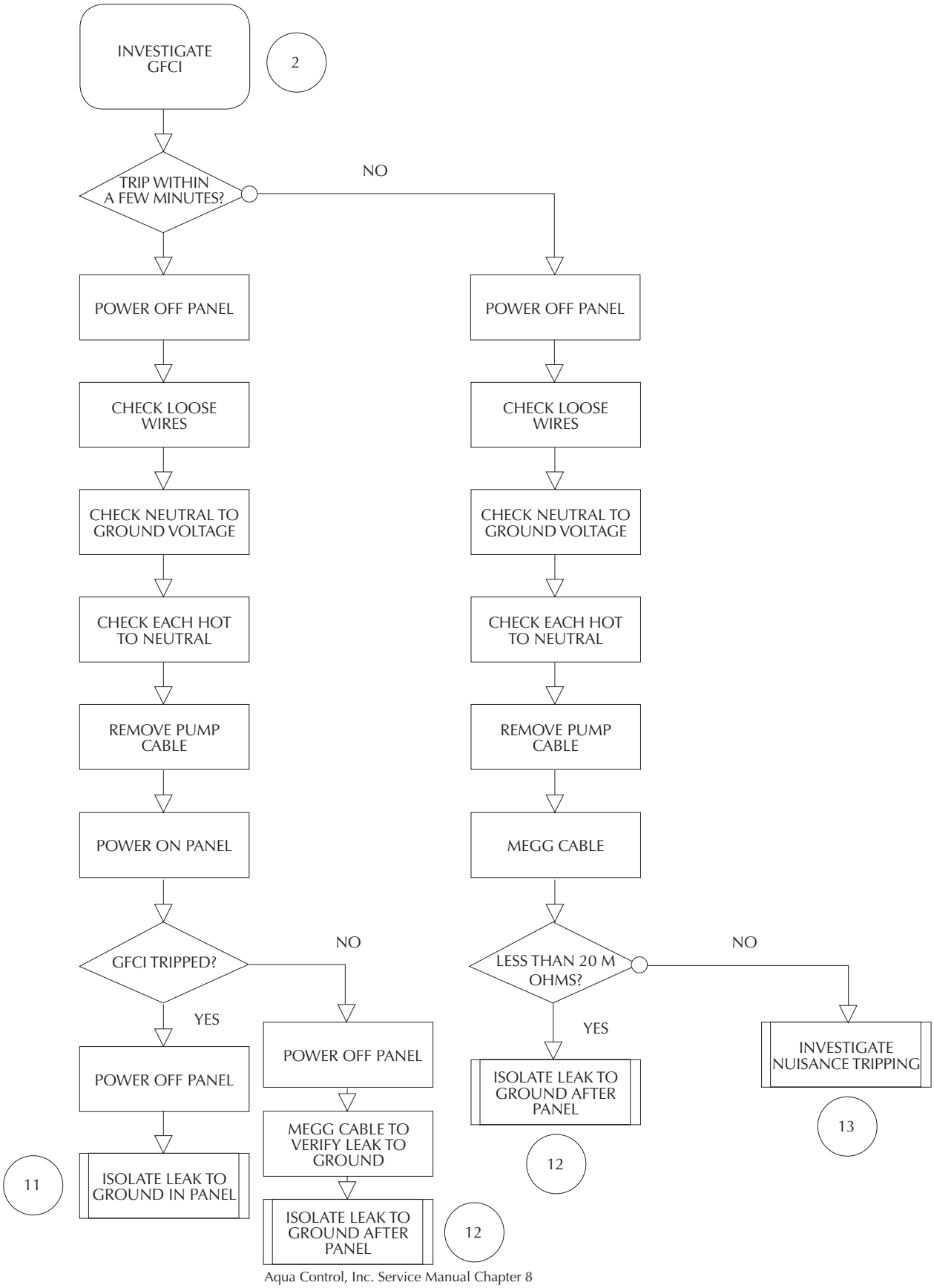
TROUBLESHOOTING

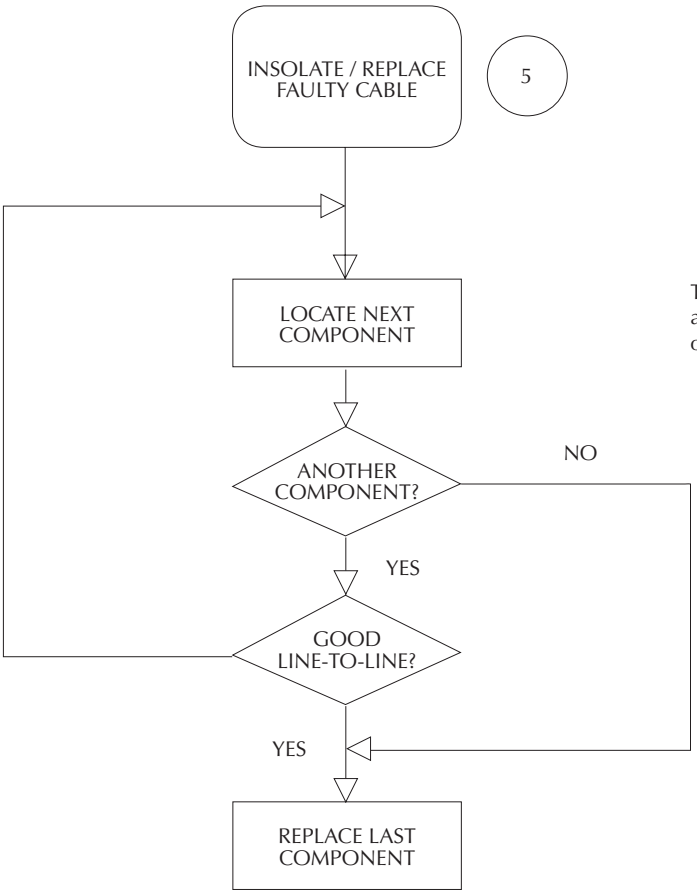
	RED AMPS	
HP	LOW	HIGH
1	1.3	43
2	2.6	51
3	6.0	84
5	10.8	121

Franklin motor control boxes have a complete set of tests included on the inside of the motor control box.

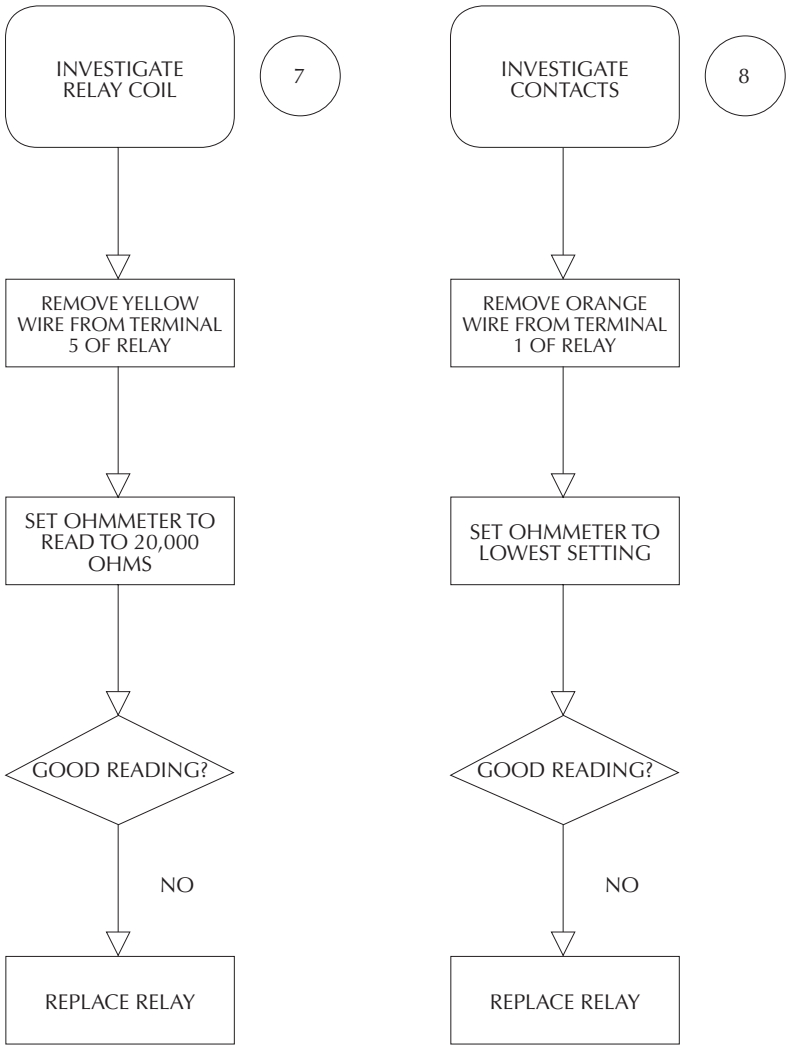
High amps, (locked rotor amps) are only needed for very short periods of time, usually 1 second or less. Many multimeters will not register the high amps.




INVESTIGATE GFCI
2
TRIP WITHIN A FEW MINUTES?
NO
POWER OFF PANEL
CHECK LOOSE WIRES
CHECK NEUTRAL TO GROUND VOLTAGE
CHECK EACH HOT TO NEUTRAL
REMOVE PUMP CABLE
POWER ON PANEL
GFCI TRIPPED?
NO
YES
POWER OFF PANEL
ISOLATE LEAK TO GROUND IN PANEL
11
POWER OFF PANEL
MEGG CABLE TO VERIFY LEAK TO GROUND
ISOLATE LEAK TO GROUND AFTER PANEL
12
POWER OFF PANEL
CHECK LOOSE WIRES
CHECK NEUTRAL TO GROUND VOLTAGE
CHECK EACH HOT TO NEUTRAL
REMOVE PUMP CABLE
MEGG CABLE
LESS THAN 20 M OHMS?
NO
YES
ISOLATE LEAK TO GROUND AFTER PANEL
12
INVESTIGATE NUISANCE TRIPPING
13

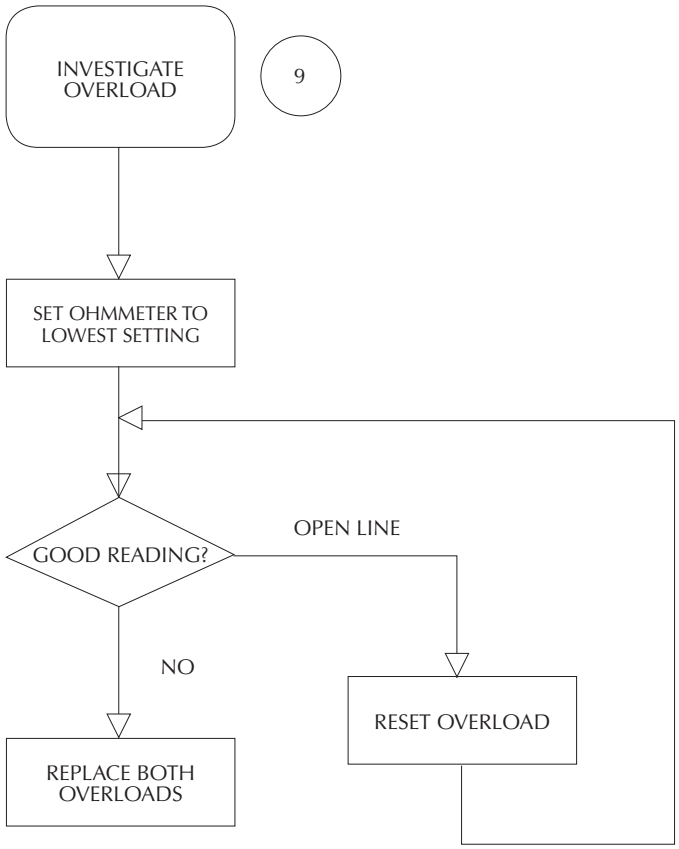


The next component may delineated by a splice, a connector or a junction box. It may be a length of cable, the motor lead or motor.



The resistance between the Red wire, terminal #2 and the Yellow connection, terminal #5 on the relay. Reading should be between 4,500 Ohms and 7,500 Ohms.

Read resistance between the Orange wire, terminal #1 and the Red connection, terminal #2. Reading should be very close to 0 Ohms.



To test an overload, read the resistance between the two soldered connections on the top of the overload. The overload should have a resistance of 0.5 Ohms or less. If the reading indicates open line the overloads must be reset and retested. Other readings indicate that both overloads should be replaced.

Resetting an overload may be quite difficult. It may require pressing extremely hard to reset them. The only certain method for determining whether an overload has been reset is to read the resistance between the two soldered connections at the top of the overload.

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TROUBLESHOOTING

Aqua Control
WATER FEATURES

For Franklin motor control boxes, the “start” capacitor is large and black. The “run” capacitor is smaller and silver. ACI motor control boxes will have a single gray “run” capacitor. 2-wire motors have the capacitors in the motor and are not directly testable.

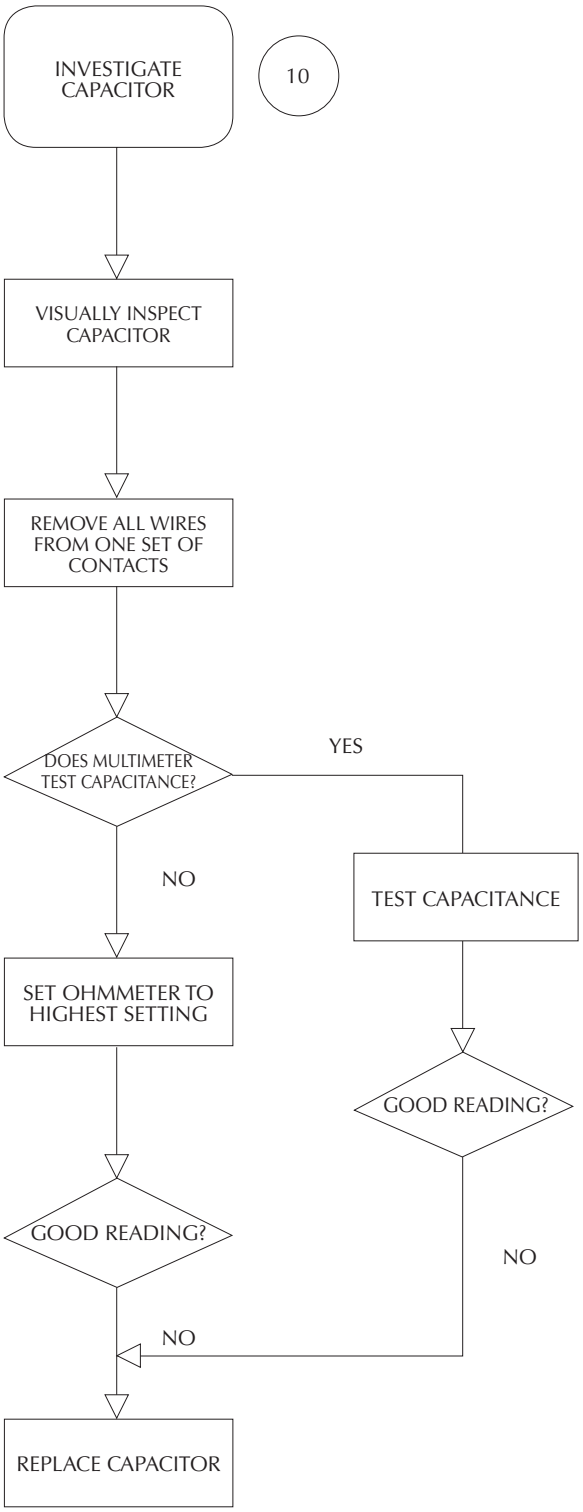
Inspect for bulging or leaking.

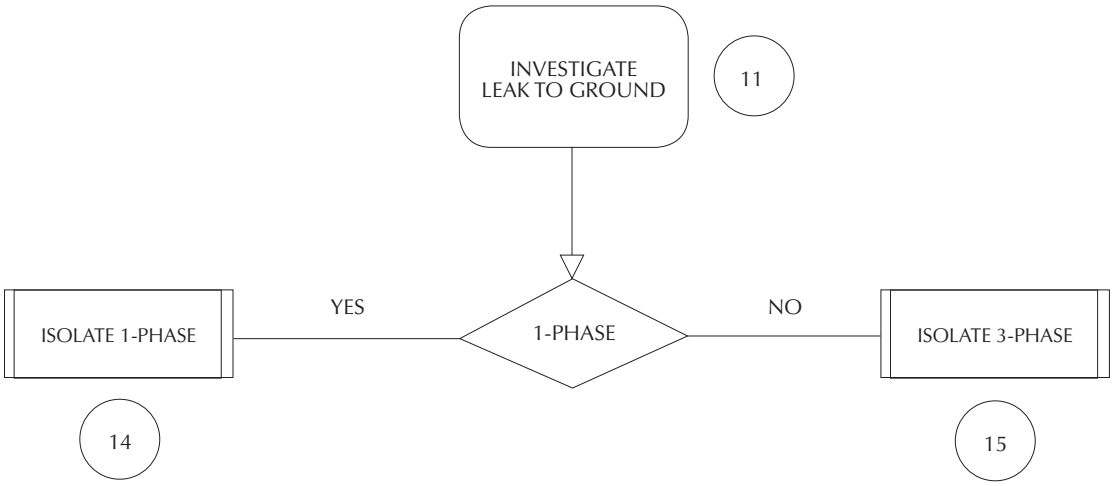
There are two sets of terminals on the bottom of each capacitor. Remove all wires from one of the terminals.

Capacitance us usually designed by “Cap” “II”, or ”I(-”. It is measured in microFarads, usually displayed as “uF”.

The capacitor’s rating will be designated on the capacitor e.g. 45 uF or 180-225 uF.

Readings should start low and climb toward “open line”. The exception to this is the start capacitor of a 5 HP unit. It will only climb to 15,000 Ohms. If the reading starts at “open line” switch probes of your multimeter and retest.



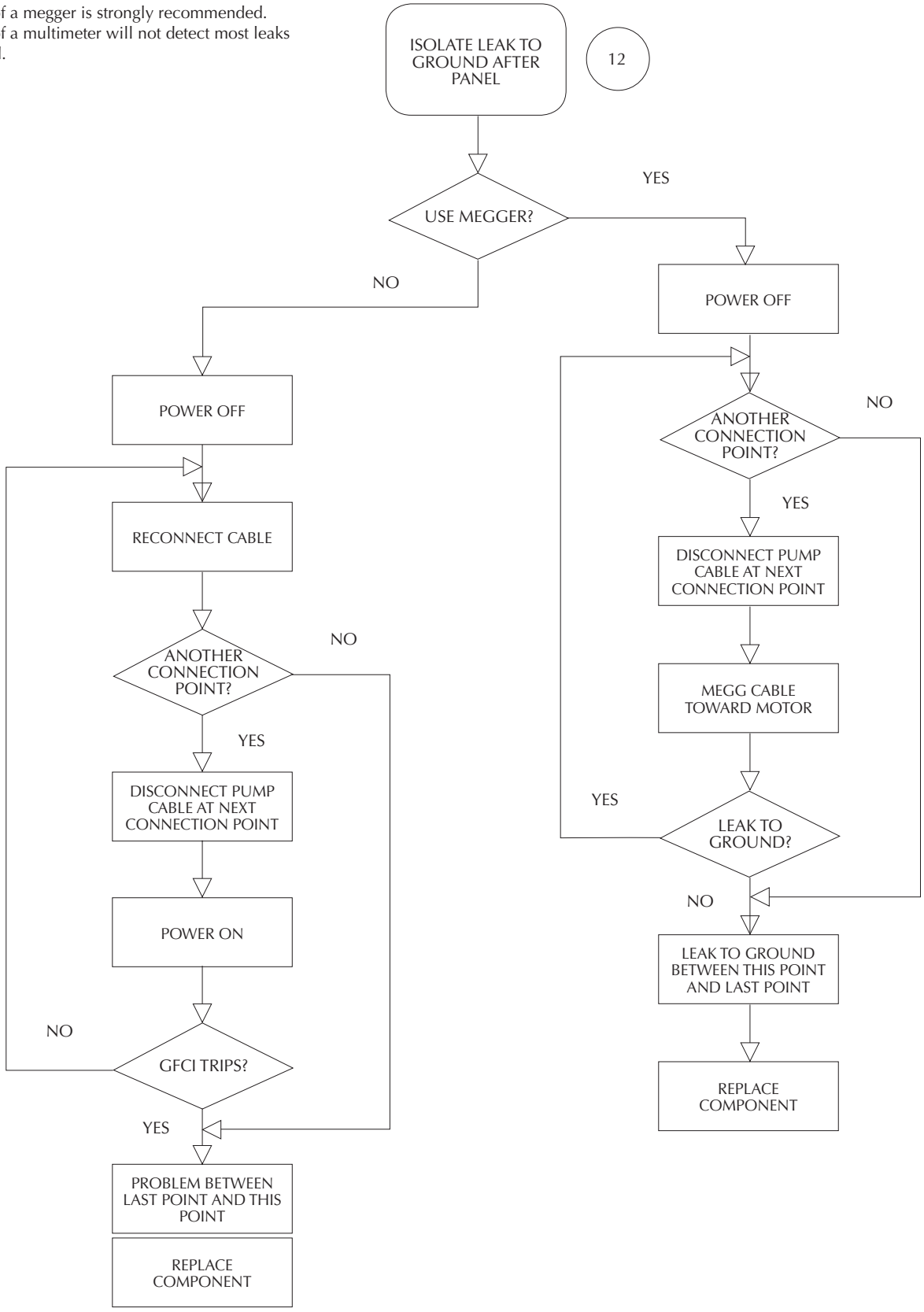

INVESTIGATE
LEAK TO GROUND
11
1-PHASE
YES
NO
ISOLATE 1-PHASE
ISOLATE 3-PHASE
14
15

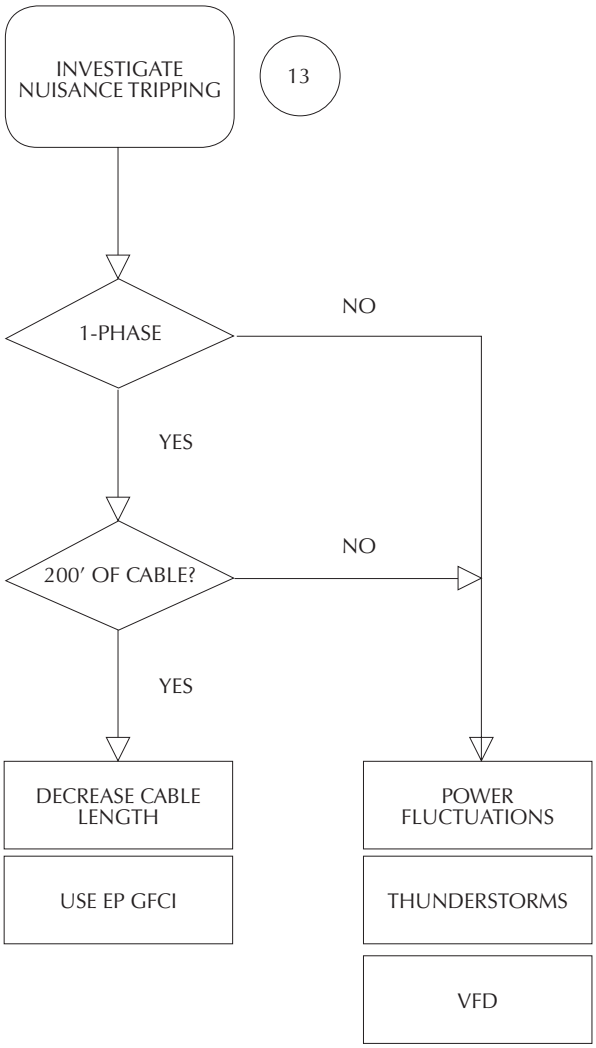
Aqua Control, Inc.

TROUBLESHOOTING

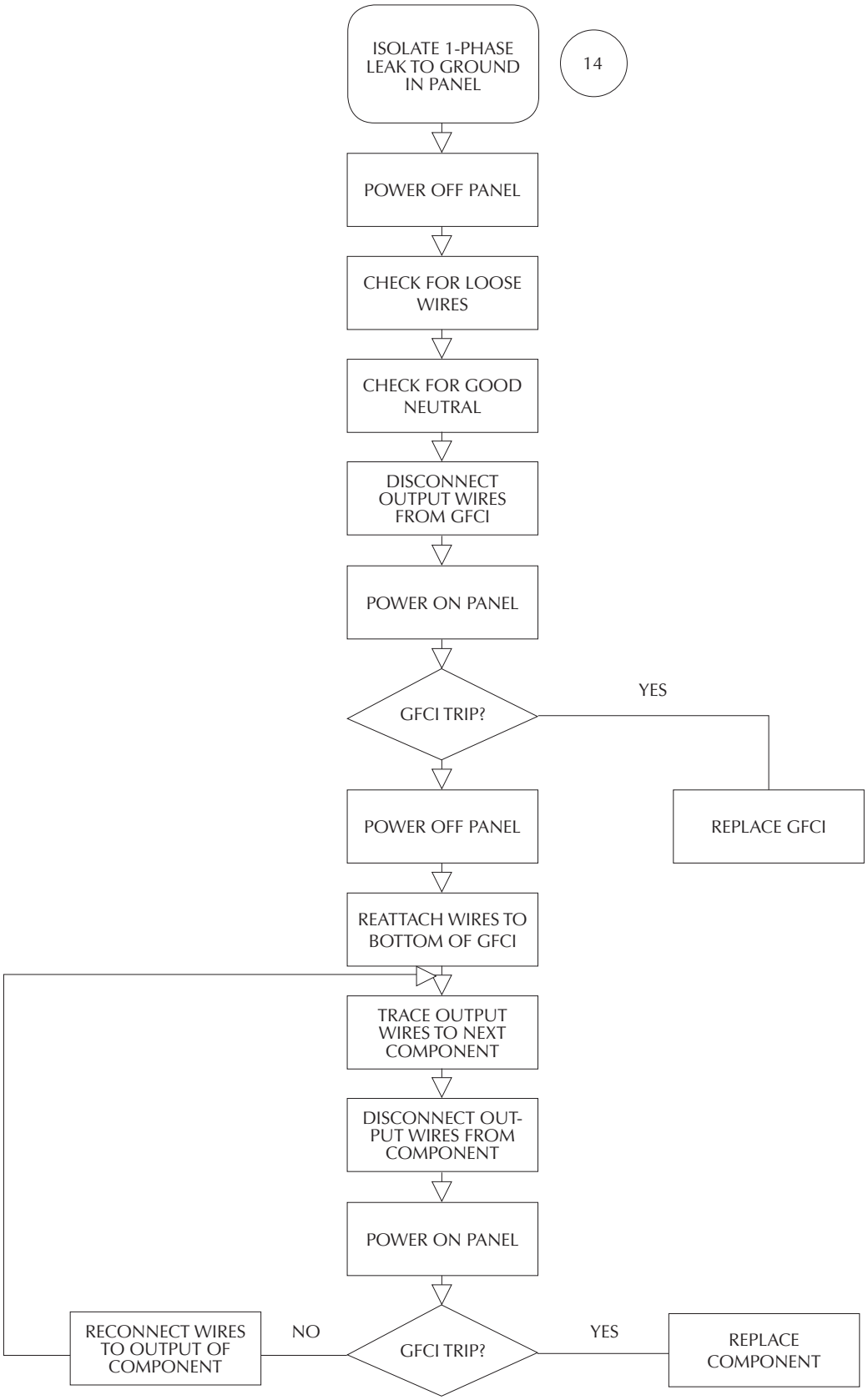
Aqua Control
WATER FEATURES

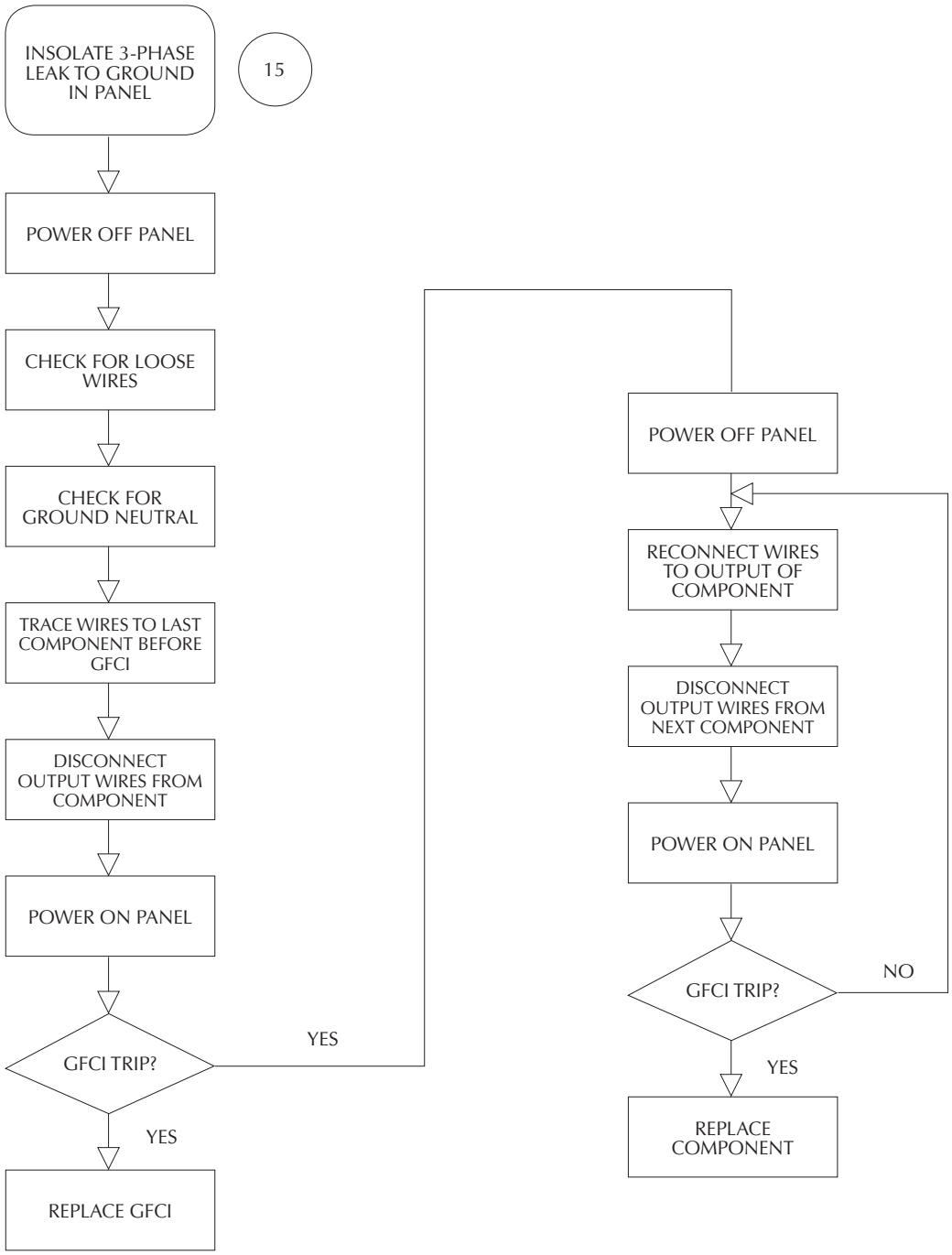
The use of a megger is strongly recommended. The use of a multimeter will not detect most leaks to ground.





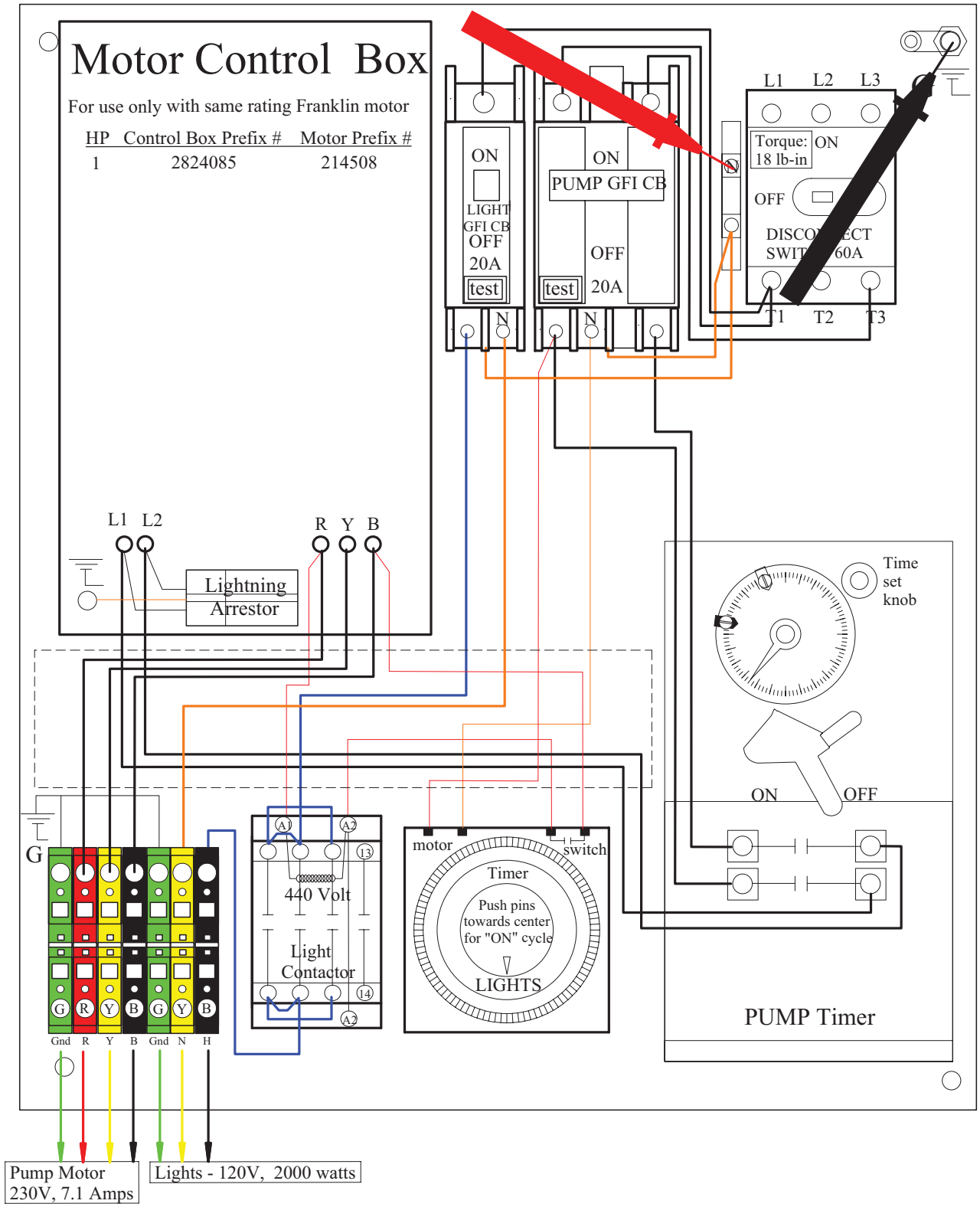
The use of an equipment-protection GFCI will remove the UL certification. Additionally, a leak-to-ground may result in electrocution.


ISOLATE 1-PHASE LEAK TO GROUND IN PANEL
14
POWER OFF PANEL
CHECK FOR LOOSE WIRES
CHECK FOR GOOD NEUTRAL
DISCONNECT OUTPUT WIRES FROM GFCI
POWER ON PANEL
GFCI TRIP?
YES
REPLACE GFCI
POWER OFF PANEL
REATTACH WIRES TO BOTTOM OF GFCI
TRACE OUTPUT WIRES TO NEXT COMPONENT
DISCONNECT OUT-PUT WIRES FROM COMPONENT
POWER ON PANEL
GFCI TRIP?
NO
RECONNECT WIRES TO OUTPUT OF COMPONENT
YES
REPLACE COMPONENT


INSOLATE 3-PHASE LEAK TO GROUND IN PANEL
15
POWER OFF PANEL
CHECK FOR LOOSE WIRES
CHECK FOR GROUND NEUTRAL
TRACE WIRES TO LAST COMPONENT BEFORE GFCI
DISCONNECT OUTPUT WIRES FROM COMPONENT
POWER ON PANEL
GFCI TRIP?
YES
YES
REPLACE GFCI
POWER OFF PANEL
RECONNECT WIRES TO OUTPUT OF COMPONENT
DISCONNECT OUTPUT WIRES FROM NEXT COMPONENT
POWER ON PANEL
GFCI TRIP?
NO
YES
REPLACE COMPONENT

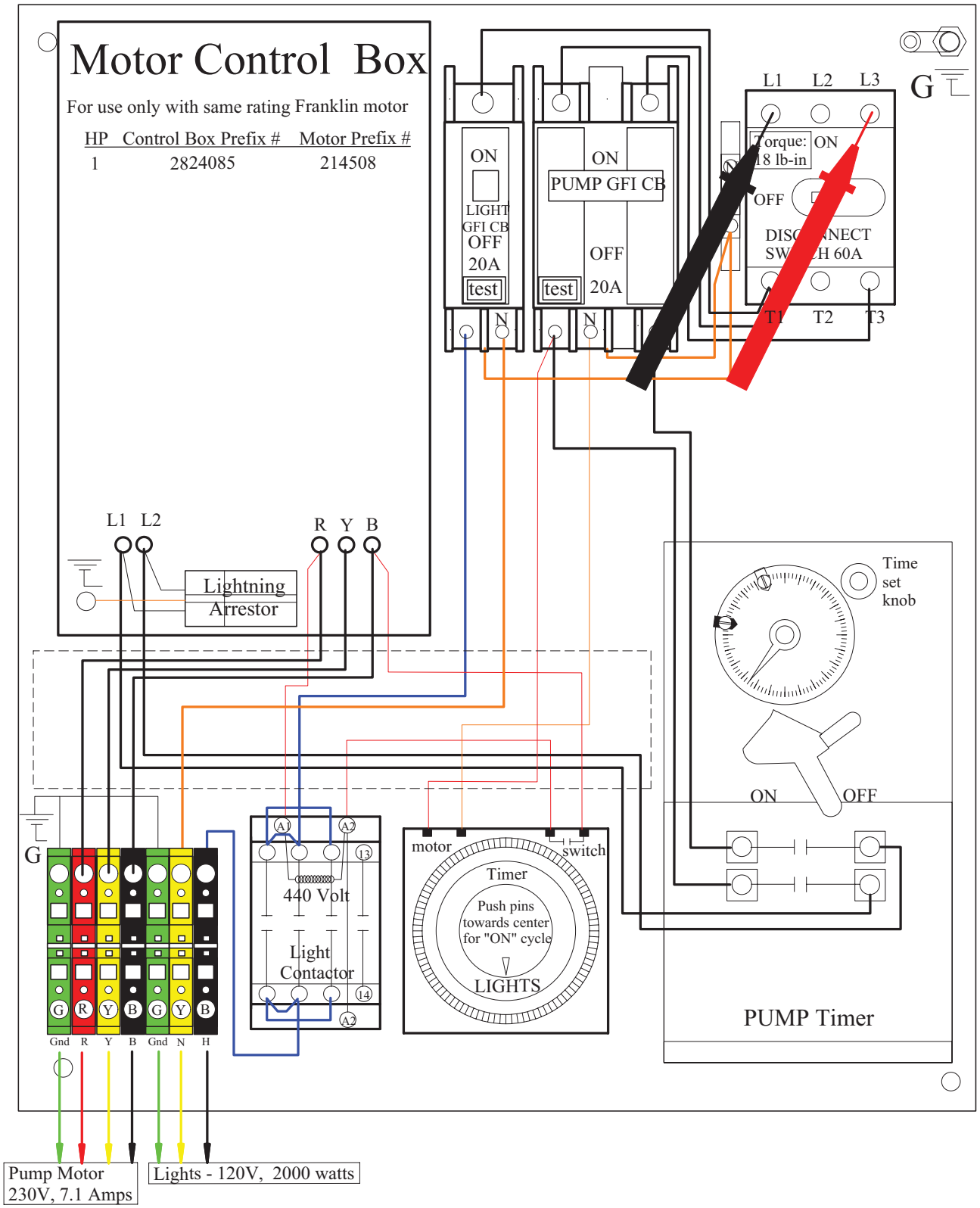
CHECKING NEUTRAL TO GROUND VOLTAGE

Neutral to ground voltage must be very close to 0.



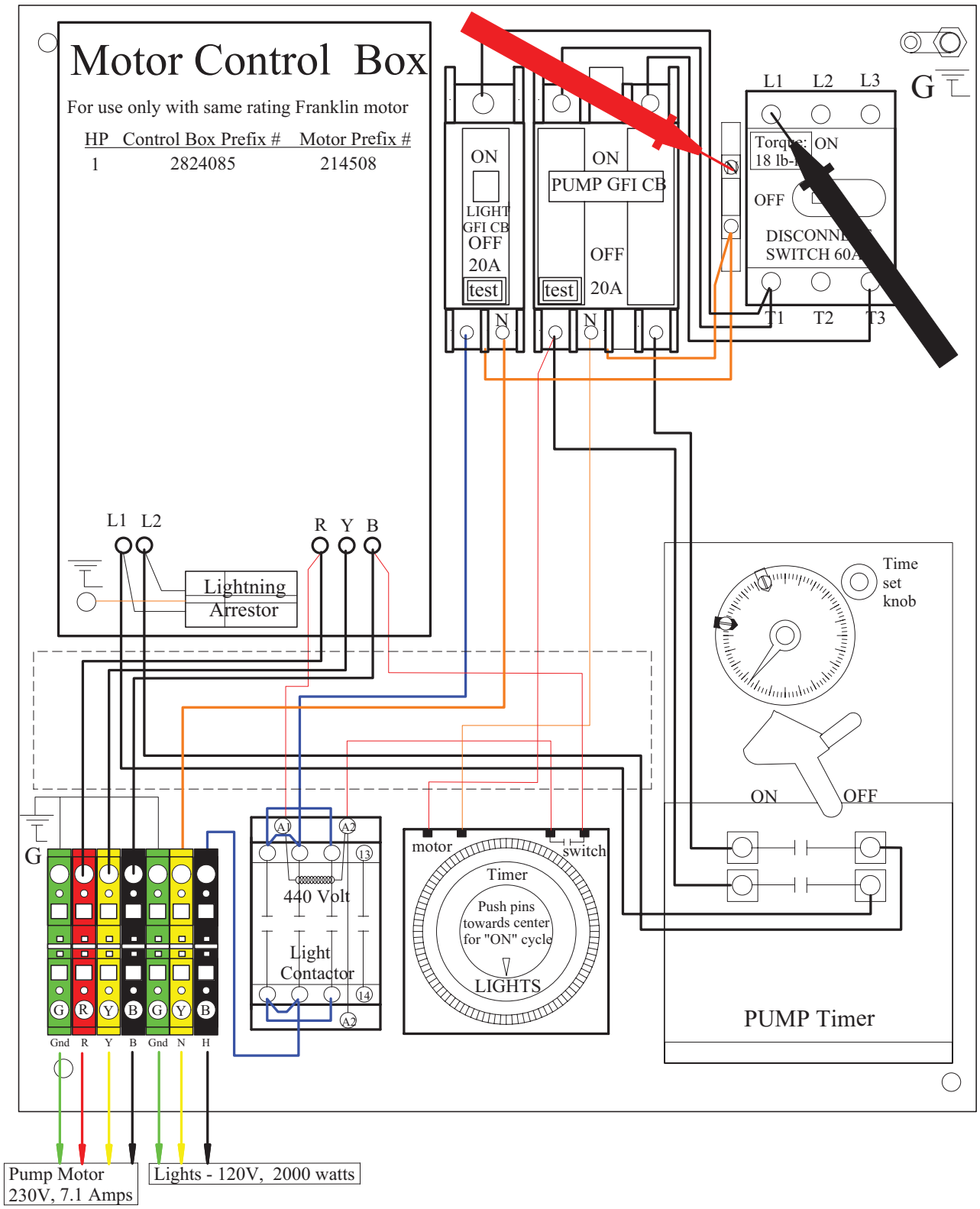
CHECKING SOURCE VOLTAGE

Source voltage for 1-phase panels is measured between terminals L1 and L3 of the rotary disconnect switch. Source voltage for 3-phase panels is measured between each pair of terminals (L1 - L2, L1- L3, L2 - L3). The readings should be the source voltage.



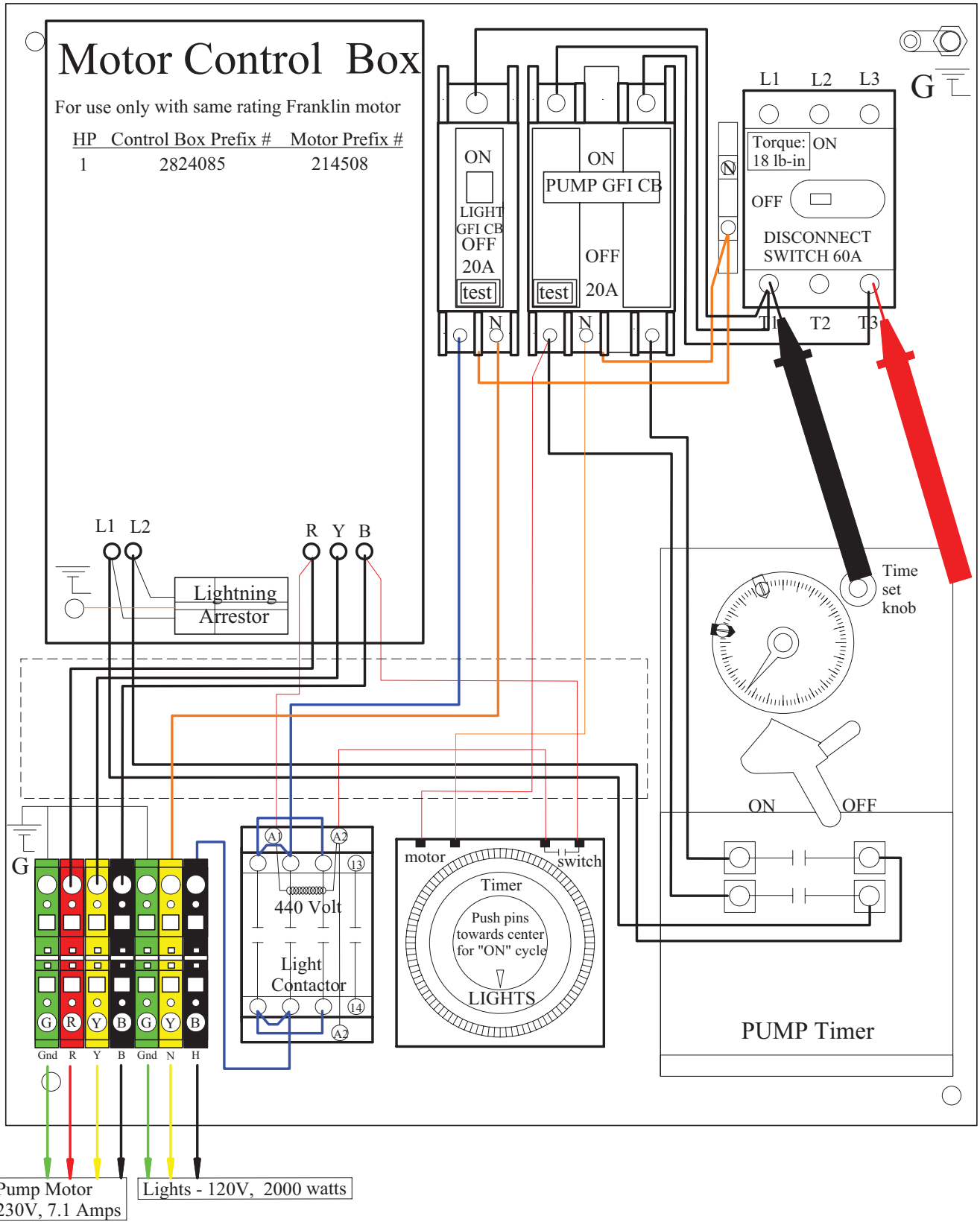
CHECKING INDIVIDUAL SOURCE VOLTAGES

Individual source voltage is measured between each input terminal with a wire and Neutral. The readings at L1 and L3 MUST be 1/2 source voltage.



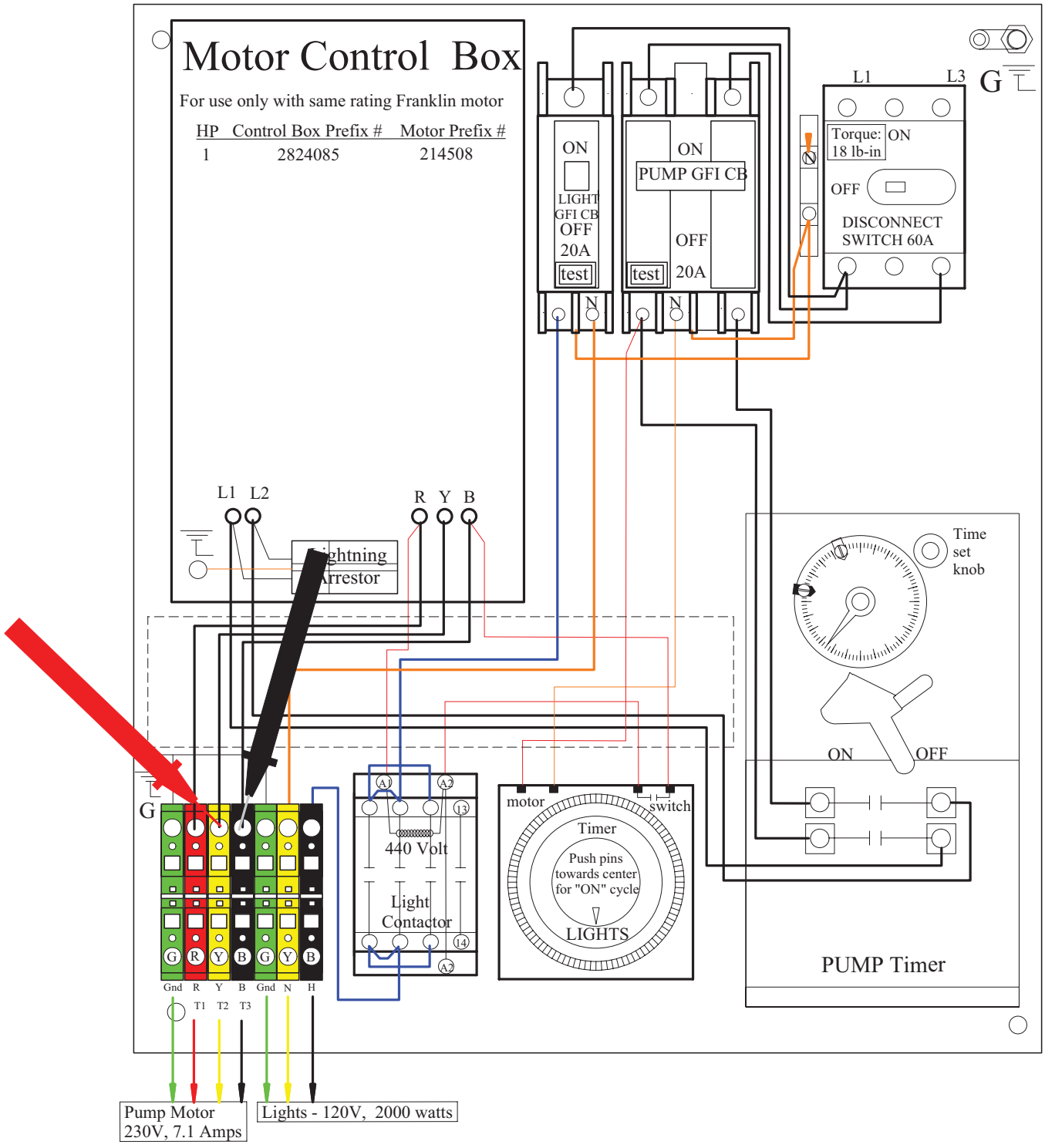
CHECKING PANEL VOLTAGE

Panel voltage for 1-phase panels is measured between terminals T1 and T3 of the rotary disconnect switch. Panel voltage for 3-phase panels is measured between each pair of terminals at the bottom of the rotary disconnnect switch (T1 - T2, T1 - T3, T2 - T3) .



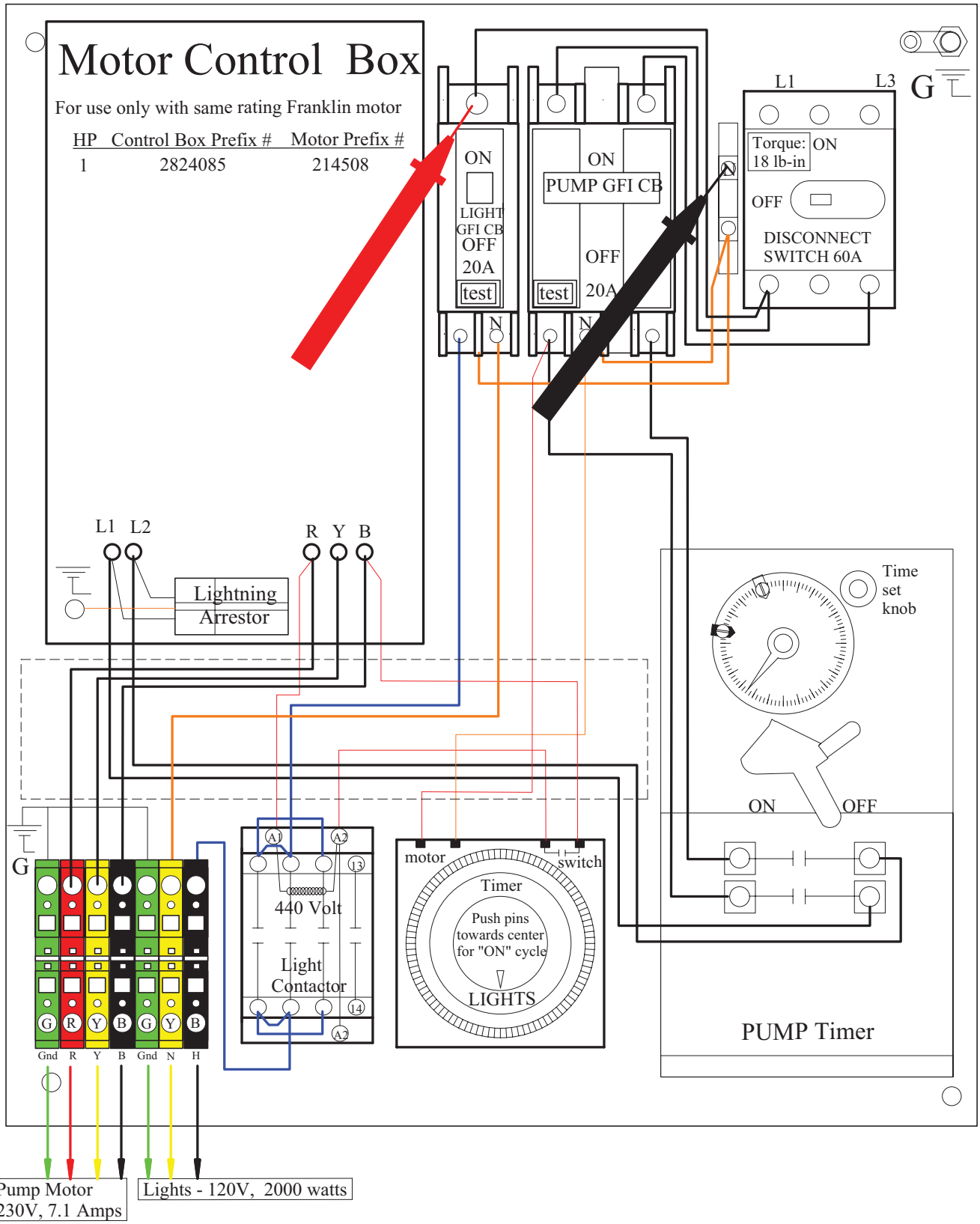
CHECKING PANEL OUTPUT VOLTAGE

1-Phase output voltage is measured between Yellow and Black pump cable terminals.
3-Phase output voltage is measured between each pair of pump cable terminals (T1 - T2, T1 - T3, T2 - T3).



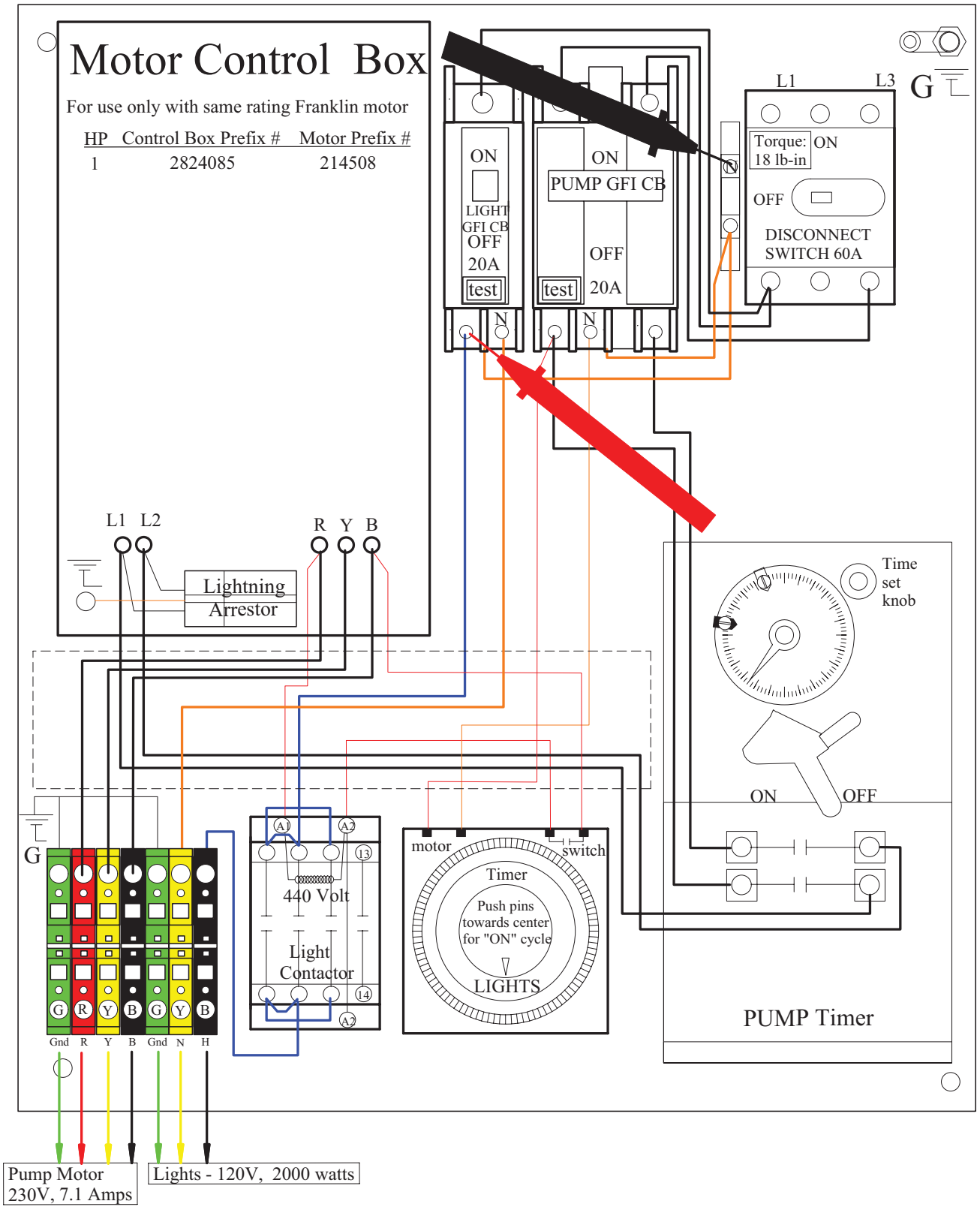
CHECKING 1-POLE GFCI INPUT VOLTAGE

Input voltage is measured between the top input and Neutral.



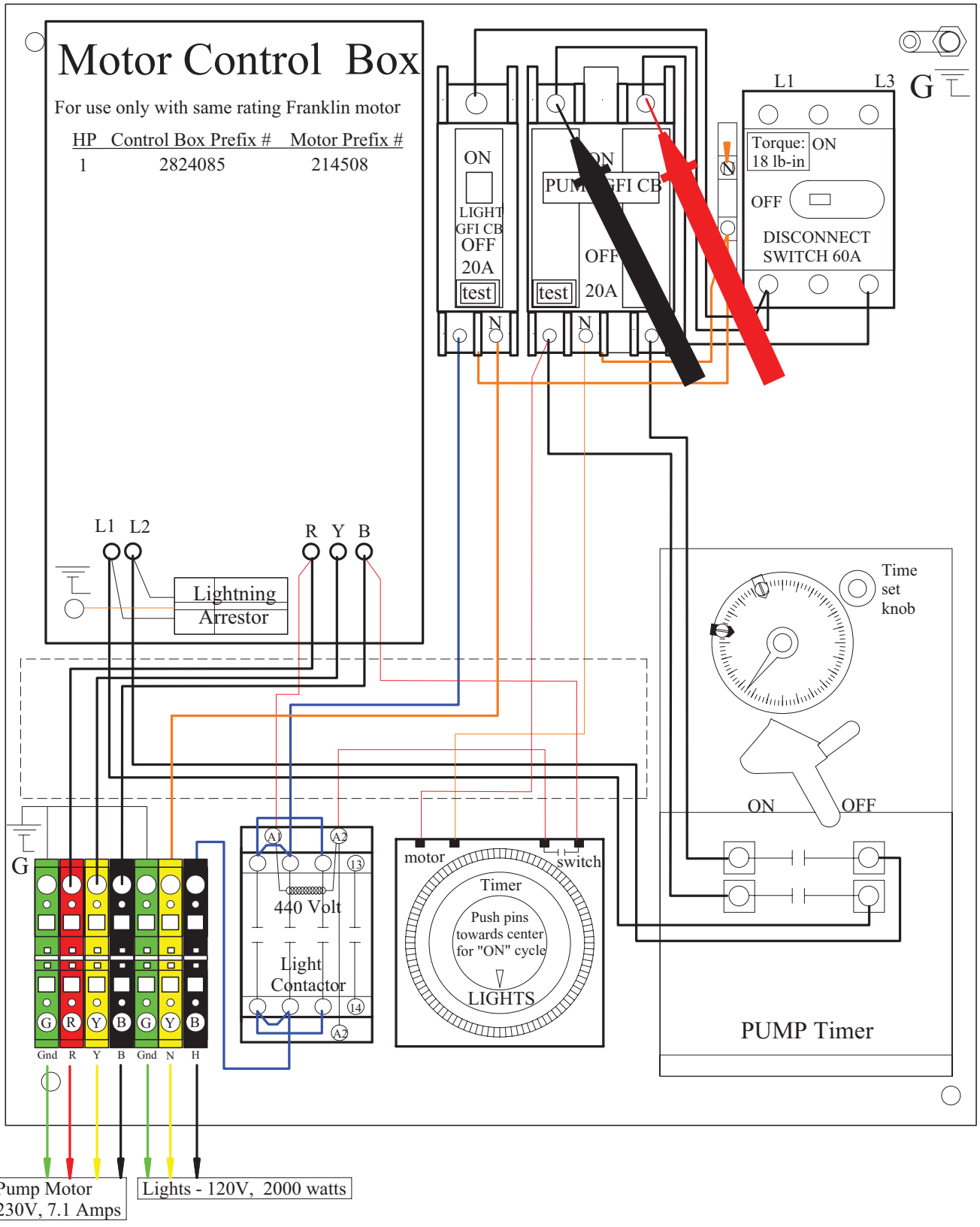
CHECKING 1-POLE GFCI OUTPUT VOLTAGE

Output voltage is measured between the bottom output terminal and Neutral.



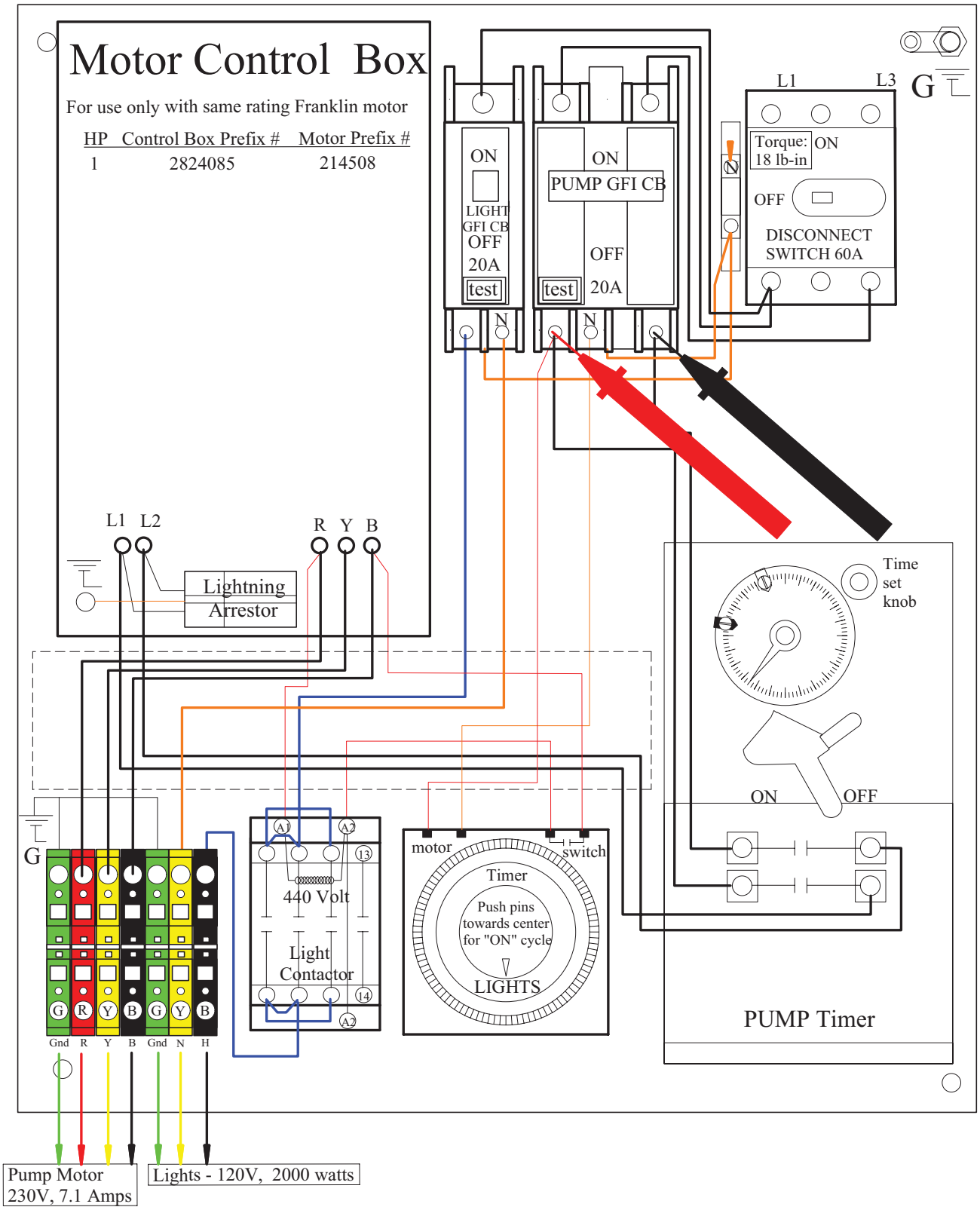
CHECKING 2-POLE GFCI INPUT VOLTAGE

Input voltage is measured between the top two input terminals and should be source voltage.



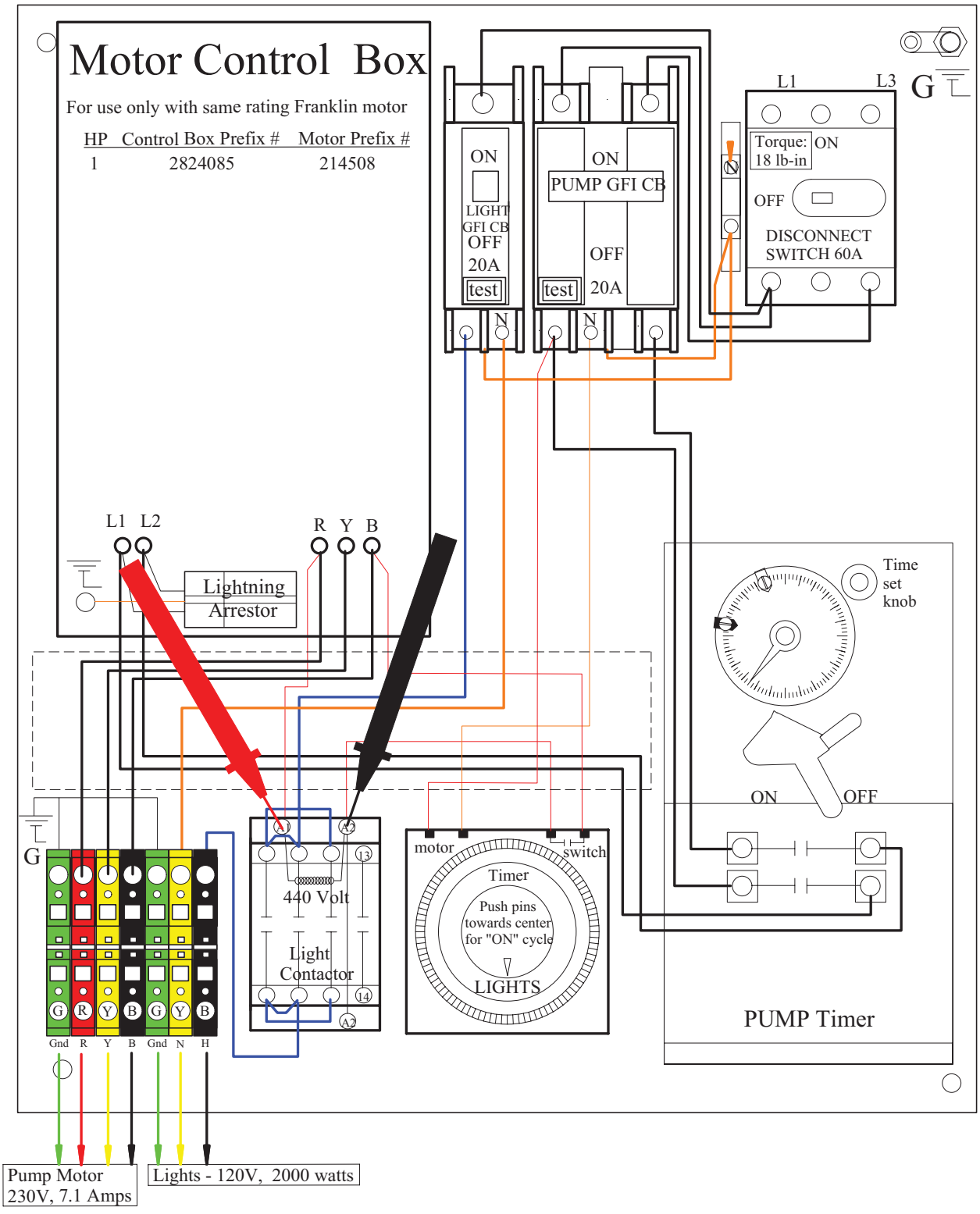
CHECKING 2-POLE GFCI OUTPUT VOLTAGE

Output voltage is measured between the bottom two output terminals.



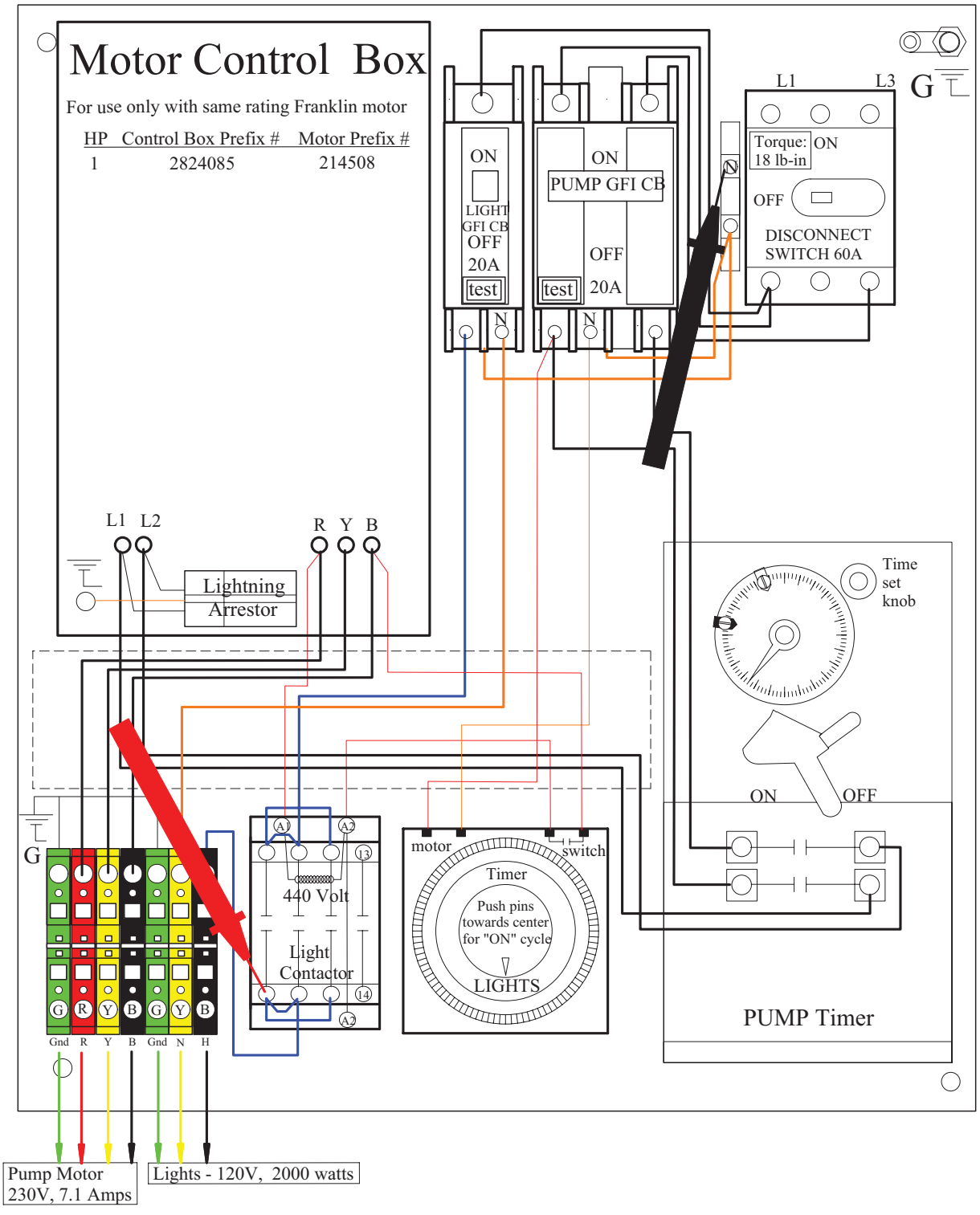
CHECKING LIGHT CONTACTOR COIL VOLTAGE

Coil voltage is measured between terminals A1 and A2.



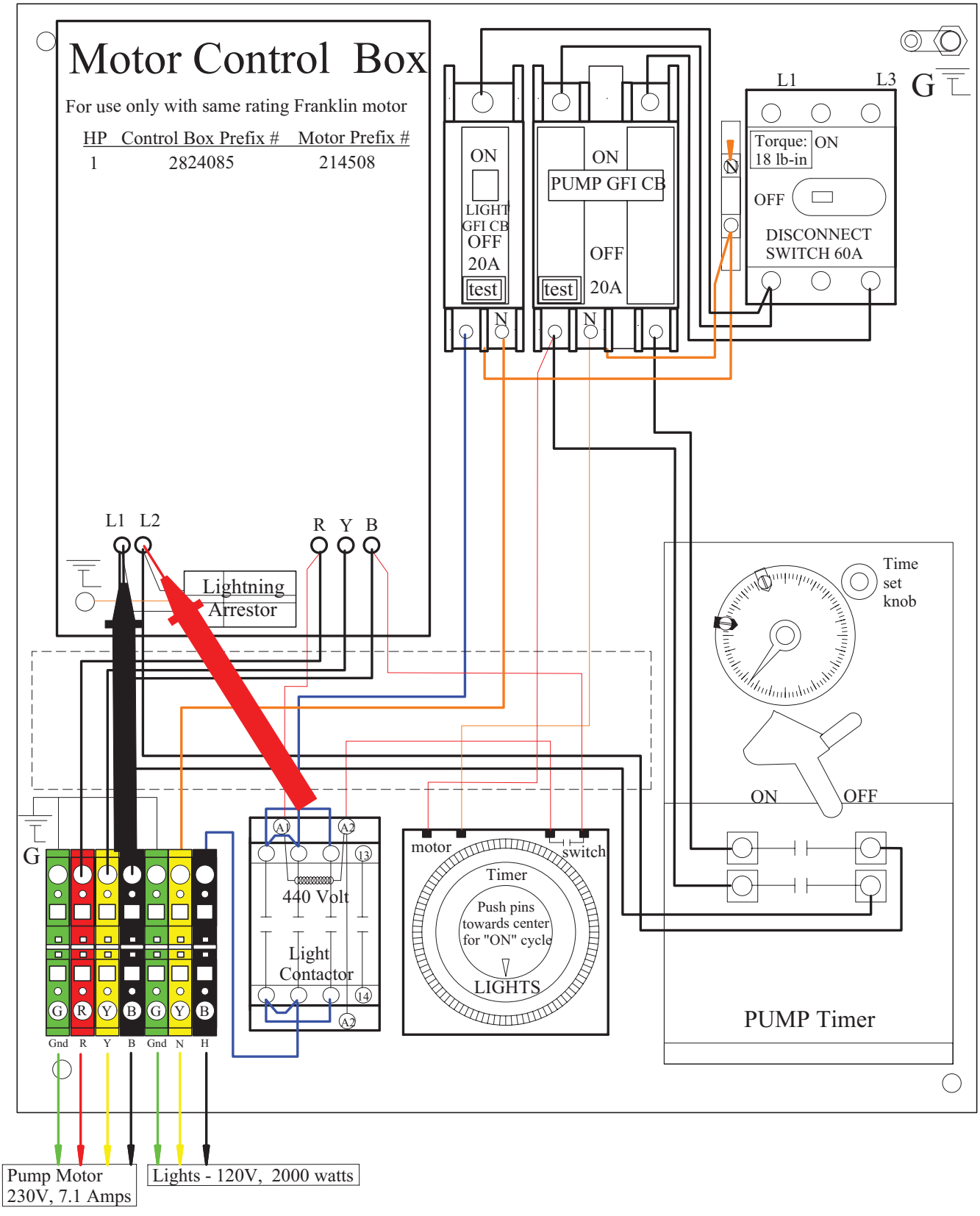
CHECKING LIGHT CONTACTOR OUTPUT VOLTAGE

Output voltage is measured between each output terminal and Neutral.



CHECKING MCB INPUT VOLTAGE

Input voltage is measured between terminals L1 and L2



CHECKING MCB OUTPUT VOLTAGE

Output voltage for MCB is measured between Y and B